CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

An ISO 9001:2008 Certified Company

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

Job No.: CTCE/BBMP/KRIDL/W.No.12/BC/Stripping/2016-17 18.02.2017

TEST REPORT ON STRIPPING VALUEOF ROAD AGGREGATES (STATIC IMMERSION TEST)

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
* Name of Work	:	Improvements to main and cross roads at Reddy layout Ravindranagara Air force compound in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	AEE/SSD/PR/QC/45/2016-17 Dated: 02.01.2017
Technical Reference	:	IS: 6241
* Type of Mix	:	Bituminous Concrete
Date of Testing	:	18.02.2017

Type of binder : 60/70
Percentage of binder used : 5.00% by wt.
Total weight of aggregate : 200 g
Total weight of binder : 10.00 g
Temperature of water-bath : 40° C

Observation Number	Stripping, Percentage	Average, Percentage	Average Retained Coating, %
1	3.2	3.37	96.63
2	3.6		
3	3.3		

*Information is furnished by the Customer/Representative.

Comments:

→ Minimum allowable Aggregate retained coating for Bituminous Concrete is 95%

Note:

⇒The report shall not be reproduced, except in full, without the written approval of the laboratory.

⇒The results indicated above are based on the tests carried out on the samples received in the laboratory.

⇒Any Query regarding the report must be reported within 30 days from the date of testing.

AE-12

ಸಹಾಯಕ ಕಾರ್ಯನಿರ್ವಾಹಕ ಅಭಿಯಂತರರು
ಶೆಟ್ಟಿಹಳ್ಳಿ ಉಪವಿಭಾಗ, ಬಾಸವನಹಳ್ಳಿ ವಲಯ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ
ಬಿ.ಬಿ.ಎಂ.ಪಿ. ರಸ್ತೆ, ರವೀಂದ್ರನಗರ, ಬೆಂಗಳೂರು

****

Civil-tech Consultants & Engineers
#23/14, 7th Cross 3rd Stage 4th Block,
Shakthi Ganapathinagar,
Basaveshwaranagar, Bangalore-560 079.

CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

An ISO 9001:2008 Certified Company

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

Job : CTCE/BBMP/KRIDL/W.No.12/BC/Sp_Wa/2016-17 18.02.2017

TEST REEPORT ON SPECIFIC GRAVITY AND WATER ABSORPTION

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
* Name of Work	:	Improvements to main and cross roads at Reddy layout Ravindranagara Air force compound in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	AEE/SSD/PR/QC/45/2016-17 Dated: 02.01.2017
* Sample ID	:	Hot mix plant, Bangalore
Technical Reference	:	IS : 2386(Part -3)-1963 (RA-2011)
* Type of Mix	:	Bituminous Concrete
Date of Testing	:	18.02.2017

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2002	2005	2003	
2	Weight of basket suspended in water	W_2 g	755	755	755	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1239	1238	1248	
4	Weight of saturated surface dry aggregate in air	W_3 g	2026	2024	2025	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	787	786	777	
6	Weight of oven dried aggregate	W_4 g	2017	2016	2015	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.563	2.565	2.593	2.574
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.593	2.591	2.627	2.604
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.45%	0.40%	0.50%	0.45%

*Information is furnished by the Customer/Representative.

Comments:

→ Maximum allowable Aggregate Water absorption value for Bituminous Concrete is 2.0%

Note:

⇒The report shall not be reproduced, except in full, without the written approval of the laboratory.

⇒The results indicated above are based on the tests carried out on the samples received in the laboratory.

⇒Any Query regarding the report must be reported within 30 days from the date of testing.

AE-12

ನಿರ್ವಾಹಕ ಕಾರ್ಯನಿರ್ವಾಹಕ ಅಭಿಯಂತರರು

****

Civil-tech Consultants & Engineers

#23/14, 7th Cross, 3rd Stage, 4th Block, Shakthi Ganapathi Nagara, Basaveshwaranagar, Bangalore-79.

Tele Fax : 23223227, Website : www.civiltechconsultants.com

E-mail : vishwanath.ia@civiltechconsultants.com / info@civiltechconsultants.com

CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

An ISO 9001:2008 Certified Company

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No: CTCE/BBMP/KRIDL/W.No.12/BC/Bitumen/2016-17 18.02.2017

TEST REPORT ON BITUMEN CONTENT OF BITUMINOUS CONCRETE MIX

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
* Name of Work	:	Improvements to main and cross roads at Reddy layout Ravindranagara Air force compound in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	AEE/SSD/PR/QC/45/2016-17 Dated: 02.01.2017
* Sample ID	:	Roads at Reddy Layout, Ward No.12
Technical Reference	:	IRC:SP:11-1984
Date of Testing	:	18.02.2017

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	474	473.5
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.		
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	26	26.50
7. Bitumen content in %	5.20	5.30
8. Average	5.25	

*Information is furnished by the Customer/Representative.

Note:

⇒The report shall not be reproduced, except in full, without the written approval of the laboratory.

⇒The results indicated above are based on the tests carried out on the samples received in the laboratory.

⇒Any Query regarding the report must be reported within 30 days from the date of testing.

AE-12

ಸಹಾಯಕ ಕಾರ್ಯನಿರ್ವಾಹಕ ಅಭಿಯಂತರರು
ಶೆಟ್ಟಿಹಳ್ಳಿ ಉಪವಿಭಾಗ, ಬಾಸವನಹಳ್ಳಿ ವಲಯ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ
ಎಸ್.ಎಂ. ರಸ್ತೆ, ರವೀಂದ್ರನಗರ, ಬೆಂಗಳೂರು

****

Civil-tech Consultants & Engineers
#23/14, 7th Cross 3rd Stage 4th Block,
Shakthi Ganapathinagar,
Basaveshwaranagar, Bangalore-560 079.

CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

An ISO 9001:2008 Certified Company

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

Job : CTCE/BBMP/KRIDL/W.No.12/BC/Bitumen/2016-17 18.02.2017

TEST REPORT ON BITUMEN CONTENT AFTER GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
* Name of Work	:	Improvements to main and cross roads at Reddy layout Ravindranagara Air force compound in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	AEE/SSD/PR/QC/45/2016-17 Dated: 02.01.2017
* Sample ID	:	Roads at Reddy Layout, Ward No.12
Technical Reference	:	IRC:SP:11-1984
Date of Testing	:	18.02.2017

GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-18 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
19	0	0	0	100	100
13.2	44.53	9.39	9.39	90.61	79-100
9.5	35.26	7.44	16.83	83.17	70-88
4.75	71.45	15.07	31.91	68.09	53-71
2.36	66.52	14.03	45.94	54.06	42-58
1.18	54.12	11.42	57.36	42.64	34-48
0.6	56.23	11.86	69.22	30.78	26-38
0.3	45.74	9.65	78.87	21.13	18-28
0.15	36.25	7.65	86.52	13.48	12-20
0.075	37.52	7.92	94.43	5.57	4-10

Sieve Size in mm	Trail 2				Specified Limits as per MORTH specification table 500-18 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
19	0	0	0	100	100
13.2	35.23	7.44	7.44	92.56	79-100
9.5	44.15	9.32	16.76	83.24	70-88
4.75	66.58	14.06	30.83	69.17	53-71
2.36	74.12	15.65	46.48	53.52	42-58
1.18	62.15	13.13	59.61	40.39	34-48
0.6	52.36	11.06	70.66	29.34	26-38
0.3	39.63	8.37	79.03	20.97	18-28
0.15	28.47	6.01	85.05	14.95	12-20
0.075	35.12	7.42	92.46	7.54	4-10

*Information is furnished by the Customer/Representative.

Note:

⇒The report shall not be reproduced, except in full, without the written approval of the laboratory.

⇒The results indicated above are based on the tests carried out on the samples received in the laboratory.

⇒Any Query regarding the report must be reported within 30 days from the date of issue.

For Civil-Tech Consultants & Engineers

#23/T4, 7th Cross, 3rd Stage, 4th Block, Shakthi Ganapathi Nagara, Basaveshwaranagar, Bangalore-79.

Tele Fax : 23223227, Website : www.civiltechconsultants.com

E-mail : vishwanath.ia@civiltechconsultants.com / info@civiltechconsultants.com

CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

An ISO 9001:2008 Certified Company

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No.: CTCE/BBMP/KRIDL/W.No.12/BC/Agg/2016-17 18.02.2017

TEST REPORT ON GRADATION OF AGGREGATE

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
* Name of Work	:	Improvements to main and cross roads at Reddy layout Ravindranagara Air force compound in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	AEE/SSD/PR/QC/45/2016-17 Dated: 02.01.2017
* Sample ID	:	Bituminous Concrete
Technical Reference	:	IS : 2386(Part -1)-1963 (RA-2011)
* Type of Mix	:	Hot mix plant, Bangalore
Date of Testing	:	18.02.2017

Total Weight of Sample: **5200** gm

Sieve Size, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per `MORTH 500-18
13.2	745	14.33	14.33	85.67	79 - 100	
9.5	520	10.00	24.33	75.67	70 - 88	
4.75	635	12.21	36.54	63.46	53 - 71	
2.36	515	9.90	46.44	53.56	42 - 58	
1.18	540	10.38	56.83	43.17	34 - 48	
0.600	575	11.06	67.88	32.12	26 - 38	
0.300	550	10.58	78.46	21.54	18 - 28	
0.150	385	7.40	85.87	14.13	12 - 20	
0.075	415	7.98	93.85	6.15	4 - 10	

Total Weight of Sample: **5250** gm

Sieve Size, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per MORTH 500-18
13.2	625	11.90	11.90	88.10	79 - 100	
9.5	555	10.57	22.48	77.52	70 - 88	
4.75	515	9.81	32.29	67.71	53 - 71	
2.36	550	10.48	42.76	57.24	42 - 58	
1.18	615	11.71	54.48	45.52	34 - 48	
0.600	545	10.38	64.86	35.14	26 - 38	
0.300	580	11.05	75.90	24.10	18 - 28	
0.150	375	7.14	83.05	16.95	12 - 20	
0.075	490	9.33	92.38	7.62	4 - 10	

*Information is furnished by the Customer/Representative.

Note:

=> The report shall not be reproduced, except in full, without the written approval of the laboratory.

=> The results indicated above are based on the tests carried out on the samples received in the laboratory.

=> Any Query regarding the report must be reported within 30 days from the date of testing.

****

Civil-tech Consultants & Engineers

#23/14, 7th Cross, 3rd Stage, 4th Block, Shakthi Ganapathi Nagara, Basaveshwaranagar, Bangalore-79.

Tele Fax : 23223227, Website : www.civiltechconsultants.com

E-mail : vishwanath.ia@civiltechconsultants.com / info@civiltechconsultants.com

CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

An ISO 9001:2008 Certified Company

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

Job No.: CTCE/BBMP/KRIDL/W.No.12/BC/Stability/2016-17 18.02.2017

TEST REPORT ON MARSHALL STABILITY OF MIX

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
*Name of the Work	:	Improvements to main and cross roads at Reddy layout Ravindranagara Air force compound in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
*Reference	:	AEE/SSD/PR/QC/45/2016-17 Dated: 02.01.2017
* Source	:	Hot mix Plant, Bangalore
* Type of Mix	:	Bituminous Concrete
Date of Testing	:	18.02.2017

The results of the tests conducted on the Bituminous Concrete mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshall Stability, Kn	9.55	9.25	9 Kn (min)
2	Marshall flow, mm	2.30	3.20	2 – 4
3	Percent air voids in Mineral Aggregate	3.65	3.45	3 – 6
4	Voids in Compacted Mix	13.25	13.40	13 - 15
5	Percent Voids filled with Bitumen	66.75	67.50	65 - 75
6	Density, g/cc	2.28	2.27	--

*Information is furnished by the Customer/Representative.

Note:

⇒ The report shall not be reproduced, except in full, without the written approval of the laboratory.

⇒ The results indicated above are based on the tests carried out on the samples received in the laboratory.

⇒ Any Query regarding the report must be reported within 30 days from the date of testing.

****

AE-12

ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಶೆಟ್ಟಿಹಳ್ಳಿ ಉಪವಿಭಾಗ, ಬಾಸವೇಶ್ವರನಗರ ವಲಯ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ
ಎಸ್.ಎಂ. ರಸ್ತೆ, ರವೀಂದ್ರನಗರ, ಬೆಂಗಳೂರು

Civil-tech Consultants & Engineers
#23/14, 7th Cross, 3rd Stage, 4th Block,
Shakthi Ganapathinagar,
Basaveshwaranagar, Bangalore-560 079.